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(54) HIGH-OIL-ABSORPTIVE POROUS SILICA, PRODUCTION THEREOF AND CARRIER

(57)Abstract:

PURPOSE: To improve oil absorptivity by drying a silica hydrogel obtained by the reaction of an alkali metal silicate having SiO₂ of a specific conc. or below with a mineral acid at the critical temp. or above of a solution.

CONSTITUTION: A mineral acid such as sulfuric acid is added into an aq. alkali metal silicate solution such as Na₂SiO₃ adjusted to $\geq 60\text{g/l}$ SiO₂ conc. by diluting with water at a prescribed temp. A SiO₂ slurry produced by aging at the temp., raising the temp. and furthermore adding the mineral acid is adjusted in pH, is filtered, washed and suspended again in water. By-product Na₂SO₄ is removed by refiltration and washing to obtain a hydrogel. By suspending the hydrogel in a solvent such as methanol, filtering and cleaning, a silica methanogel is obtained. The silica methanogel is suspended in a solvent such as methanol, is heated up to the critical point of the solvent ($T_c=240^\circ\text{C}$, $P_c=78.7\text{atm}$) and is cooled to obtain the high-oil-absorptive porous SiO₂ having $\geq 350\text{ml/100g}$ oil absorption and $\geq 5\text{ml/g}$ narrow pore volume by the mercury porosimeter.

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